

# Entrepreneurship in Post-Conflict Transition

## The Role of Informality and Access to Finance

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## Abstract

The authors examine the factors affecting the transition to self-employment in Bosnia and Herzegovina, using the World Bank Living Standard Measurement Survey panel household survey for the years 2001–2004. In the beginning of the sample, the country changed its legal framework, with the primary aim to promote labor market flexibility and to encourage entrepreneurial activity. The analysis identifies individuals that switched to self-employment (employers and own account) during the sample period and the viability of this transition, in terms of business survival for more than one year.

The results suggest an important role for financing constraints. Specifically, wealthier households are more likely to become entrepreneurs and survive in self-employment. After controlling for household wealth, having an existing bank relationship increases the likelihood of starting a business with hired employees and increases the chances of survival for the new entrepreneur. By contrast, overseas—and in some cases domestic—remittances decrease the likelihood of becoming an entrepreneur.

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# **Entrepreneurship in Post-Conflict Transition: The Role of Informality and Access to Finance**

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## 1. Introduction

A flexible, well-functioning, and entrepreneurial labor market can contribute to economic growth through the efficient allocation of labor and increased competitiveness. A better understanding of the determinants of entrepreneurship – the environment that motivates and supports the creation of self-employment – is essential for understanding the microeconomic foundations of economic growth. Conceptually, the self-employed can be considered as the smallest, but initially most vital unit of entrepreneurial activity. Self-employment was not considered conducive to growth until the 1970s, as it lacked in the emergence of scale economies and the specialization of labor (Blau, 1987). However, this negative trend was overturned in more recent years, and in the transition countries of Eastern and Central Europe, the small and medium enterprise (SME) sector has been the largest creator of new jobs and the vast majority of these new enterprises are small businesses (Ayyagari, Beck and Demirguc-Kunt, 2004; Klapper, Sarria-Allende and Sulla, 2004). Thus, the dynamics of this particular group are of great interest since the literature has indicated that the self-employed have distinct individual and labor market characteristics. In the past few years, there has been a notable amount of interest on issues of labor market mobility and transition into self-employment in developing countries.

Departing from this strand of the literature, we examine the nature of the entrepreneurial decision for the transition to self-employment in Bosnia and Herzegovina (BiH) and its viability, using a rich panel survey for the years 2001-2004. BiH is both a country in transition that emerged from a communist background and post-conflict, following the violent collapse of the former Yugoslavia. An interesting feature of this case study besides the rich dataset is that in the early period of the panel (2000-2001) the country changed its legal framework concerning labor regulation and the business environment. Therefore, BiH offers an interesting setting to examine the dynamism of latent entrepreneurship that was restricted before the market reforms.

The data allow us to directly identify individuals that switched to self-employment. Compared to studies treating self-employment per se as the dependent variable, the examination of entry into self-employment can provide a better insight into the social origin, financial circumstances, and career choices of new entrepreneurs. Of

particular interest are issues of interactions between access to finance and labor status; the relationship between the informal sector and formal types of entrepreneurial activity; and the effects of pushing and pulling factors in the transition between market states. Finally, we study the ex-post performance of new entrepreneurs in terms of their survival in the early period in business and the determinants of this performance.

Our results suggest an important role for financing constraints. Specifically, wealthier households with access to bank financing are more likely to become entrepreneurs and survive the early period of adjustment. Having an existing bank relationship significantly increases the chances of survival for the new entrepreneur, further reinforcing the importance of access to finance. In contrast, we find that overseas – and in some cases domestic – remittances significantly decrease the likelihood of becoming an entrepreneur. Finally, people working in the informal sector are more likely to transition to becoming entrepreneurs and more likely to survive.

The paper is organized as follows: Section 2 reviews the historic, macroeconomic and institutional background in BiH. Section 3 discusses the data. Section 4 presents our empirical strategy and results for self-employment entry. Section 5 examines short-term survival. Section 6 concludes.

## **2. The Labor Market and Business Environment in Bosnia and Herzegovina**

The establishment of BiH has been marked by a four-year war in the early 1990s. Almost 6% of a 4.4 million population were killed or registered as missing, over 60% were forced to relocate, and an estimated 1,000,000 people left the country (World Bank, 2005b). In 1995, the Dayton Peace Accords decentralized BiH, retaining its international boundaries. The decentralization recognized a second tier of government comprised of two entities roughly equal in size: the Bosniak/Croat Federation of Bosnia and Herzegovina (FBiH) and the Bosnian Serb-led Republika Srpska (RS).

The macroeconomic instability that followed was characterized by a 75% drop in per capita GDP between 1990 and 1995, from its initial US\$2,400 level to an estimated US\$600. In the following years, high nominal rates of economic growth increased the figure to US\$1,200 by the end of 2000 and to its prewar levels as of 2005 (World Development Indicators, 2006). The conflict also generated new categories of

unemployed and in 1996 the official self-reported unemployment rate was 80%, which decreased to 35% by 2001. However, BiH has a large informal sector that could account for as much as 50% of the official GDP and half of the registered unemployed.

Before the war, BiH had a large entrepreneurial middle-class. Compared to most centrally planned economies in Eastern Europe, the regime in the former Yugoslavia had a somewhat different treatment of small businesses, mostly those related to crafts and services. These were encouraged and provided with financing mostly from local government-owned banks. Their interests were further supported through the formation of local and politically influential crafts unions. Furthermore, BiH was a location where the former regime placed heavy manufacturing industries, on which socialist regimes placed a huge emphasis. However, the transition process and the war altered the environment, and together with the destruction of the massive state-operated factories, unemployment skyrocketed (World Bank, 2002).

Facing massive unemployment and a deficient social welfare system, the promotion of self-employment and microenterprise became a political priority. Several initiatives were taken to encourage small and medium enterprises by establishing microenterprise credit institutions.<sup>1</sup> Furthermore, in 2000-2001 BiH introduced reforms to the regulatory framework for the financial environment and the labor market. The “Microcredit Organization” law passed the FBiH parliament in 2000 and the RS parliament in 2001, establishing a legal and operational framework for microfinance. Banking reform accelerated in 2001 as all Communist-era payment bureaus were closed and the banking sector was liberalized. Foreign banks, primarily from Western Europe, now control most of the banking sector. Moreover, one of the important barriers to labor mobility and job creation – the extremely restrictive employment protection legislation – was removed in 2000 and replaced by new Entity Labor Codes.

However, the labor market still faces major challenges, such as high and rigid wages in the formal sector, a large and growing share of workers in the informal sector who are not covered by social insurance, and persistent unemployment. The formal sector remains dominated by the public sector and implementation of privatization has

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<sup>1</sup> Notably, the Local Initiatives Project funded by the World Bank, the Micro-Enterprise Bank funded by the EBRD and the IFC, and Quick Impact Program funded by the UNDP/SRRP.

been slow.<sup>2</sup> Further regulatory impediments include high taxation of wages and profits and high employer contributions, difficult access and high cost of credit, and lack of systemic trust in the regulatory and financial environment (World Bank, 2005a). As shown by the World Bank's Doing Business (2005) indicators, BiH's "Ease of Doing Business" ranking is only higher than the ranking of Belarus and the Ukraine among ECE transition countries. In a total of 154 countries, the country ranks particularly low, with respect to ease of starting a business, dealing with licenses, registering property and trading across borders. Given this challenging macroeconomic and institutional environment, in the next sections we examine determinants of self-employment transitions.

### **3. Measures of Entrepreneurship**

We use household panel data from four waves of the World Bank Living Standards Measurement Study (LSMS) for the years 2001-2004. The first wave of the LSMS survey was carried out in 2001, covering a sample of 5,400 households, 3,000 from FBiH and 2,400 from RS. The sample is representative at the country level, the entity level, and for urban, rural and mixed municipalities. Wave 2 was conducted in 2002 and 50% of original LSMS respondents were interviewed a second time. These respondents were followed in Waves 3 and 4.<sup>3</sup> This unique panel data provides rich demographic and socioeconomic information, and importantly an insight into labor market dynamics in the two entities.

We employ the labor force population, aged 16-65, and classify them into mutually exclusive groups according to their employment status every year. Following the design of the questionnaire, we define self-employed individuals as individuals describing their status as owner/co-owner of: (i) an enterprise/small business which employs workers ("employer"), (ii) an enterprise/small business which does not employ workers ("own account"). We identify "formal" self-employment, as individuals who fall

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<sup>2</sup> For a description of the SME sector in Bosnia and Herzegovina, see: World Bank (2002).

<sup>3</sup> For more information on the survey design, LSMS sampling and the creation of the panel and the contents, see World Bank (2003). Survey response rates were satisfying both at the household and the individual level, comparable to those of most well-established household surveys. The truncation of the sample after Wave 1 was conducted ensuring the continuation of representation at the 3 levels mentioned.

into the categories above and also declare work-related characteristics such as earnings and hours in self-employment and whose pension and/or health contributions are paid.

Standard ILO definitions classify a person as employed if they are presently working or on leave from a job. We further distinguish between the formal and the informal sector workers among the group of employed. We define employees in formal sector paid employment as individuals working in public enterprises and international organizations, as well as those in the private sector whose pension and health insurance contributions were paid. Informal sector employment is comprised of three groups: (a) unpaid supporting family members, farmers on own farm, and workers engaged in other activity, such as sale of agricultural products; (b) workers not employed by public enterprises (or state sector) for which pension contributions are not paid; (c) workers declaring any other out-of-employment activity, but reporting earnings or hours of work. This definition meets previous official classification criteria and informal sector estimates for BiH (World Bank, 2002). By default, the unemployed are those who do not presently have a job, are actively searching for employment, and are able to take a job if it were offered to them. All others of working age are classified as inactive. Individuals who are inactive in all waves are dropped.

For BiH and its two entities, Table 1 presents frequencies for the partitioning of the labor force. Self-employed comprise about 5% of the workforce on average, a figure that is mostly constant over the period 2001-2004 (see Figure 1). This compares to a self-employment rate of about 10% in OECD countries (Haber, Lamas and Lichtenstein, 1987; Parker, 2005). The percentage of self-employed is somewhat higher in RS, compared to FBiH. Another striking feature of the labor market in BiH is the high share of employment in the informal sector. Our calculations indicate that informal employment accounts for more than one third of total employment. There is an 8 percentage point difference between the entities, with the RS having close to a quarter of the labor force in informal employment. This is a relatively stable figure, while in FBiH the informal sector is lower but increasing in the course of the panel. Finally, with respect to the unemployment statistics, our estimates verify the picture that unemployment-inactivity comprises more than 40% of the workforce, a figure



persistently lower in RS (38%, but rising) than in FBiH (46.2% on average). Our estimates of involuntary unemployment are about 19% for both entities.

This labor status classification allows us to directly observe transitions to self-employment from year to year. We are able to identify 229 entries into self-employment status during the course of the panel (Table 2). If we look at the subsample in 2001 of household heads, we identify 119 new entries (not shown)<sup>4</sup>. Of further interest are the outcomes of the new entries, as business start-ups bear the higher risk of failure during their first years of operation. Indeed, almost half of our observed transitions to self-employment do not make it through their first year in business. This is a pattern observed in both samples of individuals and household heads. Thus, it is of further interest to examine the determinants of entrepreneurial survival as well as entrepreneurial entry. The emphasis is placed on the role of labor market experience and issues of access to finance and financing constraints.

The next section provides the background to the empirical analysis of the determinants of self-employment transition in BiH, discusses the empirical strategy and presents the results. Then, Section 5 presents the results and discussion for the analysis of firm-survival in the sample.

#### **4. Entry into Self-Employment**

Entrepreneurship has been linked to both economic and social attributes. The literature has distinguished between the role of institutions, socioeconomic factors, individual characteristics, and psychological factors, in identifying the determinants of the decision to start an entrepreneurial activity (Djankov et al., 2005, 2006a, 2006b). Other studies emphasize the importance of labor market characteristics (Earle and Sakova, 2000; Dutz et al., 2001), as well as financial wealth and constraints (Paulson and Townsend, 2004; 2005; Paulson et al., 2006). In the first stage of our analysis, we examine the microeconomic determinants of entry into self-employment in BiH, comparing differences in human, social and financial capital between groups of new entrepreneurs and individuals who did not become self-employed. In a second stage, we

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<sup>4</sup> This latter sub-sample is of interest, despite reducing the number of observations, because it is likely to capture new business openings and exclude participation in family enterprises.

examine the determinants of survival in self-employment for more than one year, comparing individuals who made it through their first year as small business operators and individuals who exited before their second year of business. The appendix provides definitions, means, and standard deviations for all variables in Table A1. Table A2 presents a correlation matrix between key variables.

#### 4.1 *Wealth, Access to Finance and Financial Institutions*

An important branch of the literature has examined the links between wealth and entrepreneurship. Evans and Jovanovic (1989) argue that borrowing constraints imply that personal assets will be positively related to the propensity of individuals to engage in entrepreneurial activities. Survey evidence from Thai households indicates that individuals who switch to self-employment are more likely to be wealthier (Paulson and Townsend, 2004).

The wealth proxy we use is the logarithm of equivalized per capita household consumption, LHHCONS, which is calculated by adjusting household consumption to the number of equivalent adults.<sup>5</sup> In transition countries, income under-reporting and non-reporting biases the calculations based on income. We therefore utilize household consumption in the beginning of the panel as an indicator of overall financial wealth. Using other wealth proxies, such as those that reflect property ownership or the ability to “make ends meet”, do not change our main results.

While there is significant evidence on the positive impact of wealth – instrumented or not (i.e., credit constraints) on entrepreneurial activity, empirical evidence on the role of financial institutions is relatively scarce. Notably, Paulson and Townsend (2004) examine the impact of particular financial institutions on overcoming financial constraints and starting a business. Departing from their work, we utilize household affiliation with particular financial institutions and sources of finance in the past and examine their impact on the likelihood of starting a new business. The role of financial institutions is of particular interest in transition economies where the financial sector has undergone major reforms, and in BiH in particular, where the creation of

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<sup>5</sup> For full information concerning welfare in Bosnia and Herzegovina and the construction of the 2001 consumption aggregates, see “Welfare in Bosnia and Herzegovina, 2001: Measurement and Findings”, 2001. The equivalized measure is calculated by adjusting household consumption to the number of equivalent adults:  $EA=(A+aK)^{\theta}$ , where A: number of adults; K: number of children; a: economies of scale parameter;  $\theta$ : share of public goods consumed parameter.

microfinance institutions has been financed and advertised by most major international financial institutions. The anecdotal evidence is that in BiH working capital finance is widely available, but quite expensive and the availability of start-up loan and equity is still problematic. Microcredit institutions on the other hand, target specific groups of the population. We include a dummy MICROLOAN equal to 1 if the household received a loan from a microcredit institution (such as a credit union, cooperative, or NGO) in 2001. We also identify households that received a loan from a bank or government agency in 2001, BANKLOAN, and households that received a loan from a family member, friend or other individual in 2001, INFORMLOAN. Despite various initiatives, only about 2.5% of our sample are members of households that received microloans, while about 17% of individuals receive informal loans and about 12% of individuals receive bank loans.

Another important feature is the impact of international remittances on the local economy, as the number of immigrants from BiH to the West has been large. It has been argued that remittances and aid are not conducive to entrepreneurship or private sector development and reduce labor supply (Rodriguez and Tiongson, 2001). These have been framed as “disincentive effects” (Ahlburg, 1995) or “crowding-out effects” (Connell and Brown, 2005). On the other hand, there is also evidence that remittances can support private sector development (Funkhouser, 1992). Amuedo-Dorantes and Pozo (2006) present evidence from Mexico, and after accounting for endogeneity in remittance receivership, show that its impact may vary by gender, region and sector. Thus, remittances in Mexico appear to reduce male formal sector labor supply, as well as that of the self-employed. On the contrary, its impact on informal sector labor supply is positive.

We directly test the effect of remittances on the switch to self-employment with two dummies which importantly distinguish between international and domestic remittances: REMITDOM, which equals 1 if the individual belongs to a household that received any money, gifts, or services from friends or family working in BiH; and REMITABROAD, which equals 1 if the household receives money, gifts or services from friends or family working abroad in 2001. Our estimates indicate that 8.5% of households in the sample receive some form of remittance domestically and 11.5% from abroad. We also identify individuals that receive money from humanitarian and religious

institutions that do not need repayment, GRANT. These are of specific interest, because they include grants from foreign NGOs and citizen associations provided specifically to promote self-employment and entrepreneurship (Lyman, 2005). Finally, we include SOCIALSERV, equal to 1 if a member of the individual's household received financial assistance, such as payments from an old age or war veteran's pension in 2001.

#### 4.2 Labor Market Experience

Past self-employment experience has been shown to exert significant effects on current employment status (i.e. Jovanovic's (1982) "ability learning" view). In addition, paid employment experience – particularly in small firms due to human capital acquisition – has been shown to have positive effects on the probability of becoming self-employed and obtaining higher entrepreneurial income (Parker, 2004).

The role of informal sector experience in entry into self-employment and its success is still being debated. There are two dominant views on the issue, departing from different perceptions of the labor market and leading to opposite policy implications. The first view is that of labor market segmentation, where the informal sector is seen as the disadvantaged segment of a dual labor market in which workers queue for good jobs. Institutions such as labor unions, minimum wage legislation and public sector hiring practices tend to keep formal sector wages in urban areas above market-clearing levels, and the low-productivity informal sector provides a subsistence shelter for unmatched employees (Harris and Todaro, 1970). Thus, employment in the informal sector is often seen as disguised unemployment. The notion of such a dual labor market was introduced in Lewis (1954), and further linked to size-dualism (Lucas, 1978) by a formalization into a general equilibrium model in Rauch (1991). Theoretical and empirical evidence supporting that view includes Loayza (1994), Chandra and Khan (1993), and Fields (2005).

The second view is finance-based and stresses the role of the financial market and the regulatory environment in competitive labor markets when entrepreneurs and/or workers are heterogeneous in both the formal and the informal sector. Amaral and Quintin (2006) model the costs associated with producing in the informal sector as resulting from a limited access to formal means of contract enforcement. Straub (2005) develops a model where there is an entrance fee to formal entrepreneurship, granting

access to a public good identified with access to a better credit market. Further recent models include Paula and Scheinkman (2006) and Galiani (2007). Maloney (1999; 2004), Pratap and Quintin (2004) present empirical evidence from Latin America, against the segmentation view. Departing from Straub (2005), one can perceive the decision to be formal/informal taking place in a moral hazard framework with credit rationing. There, the decision is shaped by the interaction between the cost of entry into formality and the relative efficiency of formal versus informal credit mechanisms and their related institutional arrangements. In economies under transition, the regulatory environment might not foster formal entrepreneurship and entrepreneurial individuals might choose to operate in the informal sector or shadow economy. Indeed, the work by Djankov (2002) documents the existence of significant entry costs into formality, in the form of registration and license fees.

Furthermore, thinking of Lazear's (2004) view of entrepreneurs as "jacks of all trades", one could perceive the informal sector as an incubator for formal sector entrepreneurship when the business environment improves. This prediction can also be acquired from Evans and Jovanovic (1989), according to whom individuals are more likely to gain in capital, knowledge and ability while working rather than when out of the labor market. Informality can be thought to allow a leader to explore the potential profitability of an industry without incurring significant sunk costs (Bennett and Estrin, 2007). This could be of vital importance to the development process when the regulatory environment is poor, i.e. in several development countries where there is uncertainty about the future profitability of the new ventures (Hausman et al., 2000), and several adaptations are required to support the introduction/imitation of "new" production methods (Hausman and Rodrik, 2003).

Neither of the two strands in the literature debates that informality involves tax evasion and unfair competition to the formal sector, which are significant impediments to growth. Furthermore, the informal sector is characterized by low-pay and low job security among its employees and large-extent informality in an economy is an indicator of corruption, poor regulatory, financial and labor market environment. However, considering experience in "gray" or "unofficial" markets as providing valuable human capital and as an outlet to latent entrepreneurship has important policy implications for

the treatment of the informal sector after economic liberalization in the process of economic development (Kaufmann & Kaliberda, 1996; Johnson et al., 1997).<sup>6</sup> The most prominent one shifts the focus from the banning of informality to the operation of the financial market.

#### 4.3 *Socioeconomic Characteristics and Psychological Traits*

Theory and evidence suggest the following individual characteristics are likely to determine entry into self-employment: Generally, there is a positive relationship with gender (male) and a positive concave relationship between self-employment occurrence and age and experience, with entry into self-employment peaking between the ages 35 and 44. The latter can be justified as “job shopping” in a process of learning and occupational matching (Miller, 1984). The relationship between education and entry into self-employment is likely to depend on the econometric specification employed (Parker, 2004). With respect to marital status and family considerations, the dominant view is that of Borjas (1986), where family members can facilitate self-employment activity through the provision of assistance and cheap labor. However, when entry into self-employment is considered, the evidence is not clear, and could be confounded by the fact that married population is generally less likely to take risks. Evidence on the impact of health status is mixed. It is likely that the disabled might prefer self-employment as a way out of employer discrimination. Furthermore, several microcredit schemes are targeted to these groups. Finally, entrepreneurial activity in terms of small businesses is more likely to occur in urban areas in more developed countries. However, the provision of labor and other factors of production can often be cheaper in rural areas.

Theory on the behavioral patterns of entrepreneurs stresses that the psychological profile and sociological background of individuals are important factors in the decision to initiate one’s own business. We will focus on two behavioral dimensions available in the dataset: optimism and risk-sharing and support through social capital.

Recent evidence suggests self-employed individuals are more optimistic than regular wage-earners. Entrepreneurial decisions involve greater risk-taking and are much likely to be influenced by attitudes, emotional predispositions and cognitive biases

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<sup>6</sup> Blau (1985) reviews the theoretical framework for a role for an informal sector in less developed countries.

(Arabsheibani et al., 2000; Puri and Robinson, 2005). The difficulty has always been how to measure optimism. We construct an index OPTIMISM, which is the weighted average of the intensity measured by a 4-scale response in eight questions from the General Health Questionnaire (GHQ), related to mental health and anticipatory feelings.<sup>7</sup>

Social capital is the set of social relationships an individual can draw on for various occasions. Gomez and Santor (2001) proxy for social capital using club membership, and find a positive effect on earnings from self-employment. We construct a proxy for social capital considerations, NOSOCPTL using the average of two available questions: (i) "Is there anyone you can count on to listen to you when you need to talk?", and (ii) "Is there anyone who you can really count on to help you out in a crisis?" These variables proxy for social capital in terms of the help people can get from friends, neighbors and relatives. This is an "increased security effect", a psychological safety net in the light of risk-sharing (Ravallion and Lokshin, 2006).

The sociology literature has further stressed the role of family background in developing role models that can foster entrepreneurial aspirations and the empirical evidence is ample. However, the data does not provide us with parental occupational or educational status variables. In order to control for within family effects in self-employment transitions we examine the impact of the presence of another self-employed member in the household, OTHERSE. About 7% of the individuals in our sample have family members that are self-employed.

#### 4.4 *Results*

We model the decision to become self-employed in the years 2002-2004 in the probit framework, excluding individuals already self-employed in 2001. The list of explanatory variables involves demographic, psychological and sociological characteristics described in the last section and summarized in the appendix. In separate specifications, we examine the impact of household financial wealth, the relationship with financial institutions, as well as the role of labour market experience and origins.

Table 3 presents summary statistics of the key variables, and differences in the means between individuals who were not self-employed in 2001 but chose to become

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<sup>7</sup> See Table 3 for the list of questions.

self-employed in the following years and those who did not. Married men and urban residents are more likely to make the transition into self-employment.<sup>8</sup> Individuals who become self-employed tend to be better educated and assess themselves to be in better health. Self-employed also significantly differ based on the optimism index and social capital variables, indicating that the new entrepreneurs had been more optimistic and had several more people around them to count on for support.

Self-employed are also more likely to transition from employment in the informal sector and to have someone else in their current household that is self-employed. Individuals who were unemployed or inactive in 2001 are less likely to switch to self-employment at any point in the panel. The differences between new entrepreneurs and non-entrepreneurs with respect to past household wealth and multiple property ownership are statistically significant, indicating a positive effect of own wealth in the self-employment transition. When it comes to the variables proxying for affiliation with financial institutions in the past, interestingly there are no differences between the groups, with respect to loan receivership either from banks or microcredit institutions or from informal sources. This suggests that entry into self-employments might be financed with personal wealth as opposed to loans from formal or informal financial institutions. The t-tests between the means also suggest that individuals who receive remittances – particularly from abroad – or social services are less likely to become self-employed. We add the caveat that individuals receiving remittances from abroad might also be less willing to invest in starting a local business because they hope to join family that emigrated overseas.

Next, we examine which of these interesting patterns persist in regression analysis. Table 4 presents our probit estimation results for the determinants of the transition to self-employment. Marginal effects and robust z-statistics of the coefficients are reported in absolute values. Standard errors were clustered at the household level, to correct for intra-household correlations. Table 4 introduces the main specifications, with individual and household characteristics (*column 1*), household wealth – measured as

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<sup>8</sup> The number of new entrepreneurs does not significantly differ by ethnicity: Bosnian, Croatian, Serbian or other (not shown).



household consumption in 2001 (*column 2*), past employment status (*column 3*), and customer affiliation with financial institutions (*columns 4-6*).

Results in the first two columns of Table 4 are consistent with the earlier differences in the means. The newly self-employed is more likely to be male, aged 43, residing in an urban area, married, with some formal education, in good health, and with past self-employment experience. The effects of the proxies for optimism and social capital persist, and are significant both when included together and separately. The inclusion of the household consumption variable in *Column 2* indicates a significant positive effect of past wealth on current self-employment. This suggests that self-employed rely on their own financial means in making their decision.

*Column 3* examines the impact of past employment experience and indicates that *ceteris paribus*, informal sector employees are more likely to enter self-employment compared to employees in paid employment. On the contrary, individuals coming from unemployment-inactivity are the ones least likely to start their own business. The interpretation can either consider informal sector employees to be more entrepreneurial, or highlight the lighter opportunity costs that the transition to self-employment entails for formal sector employees, who are already receiving higher premia and other non-pecuniary provisions. In order to shed some more light on this issue, we also examine the interaction between labor market origins and access to finance, and examine the survival chances of the new start-ups, with prior status as an explanatory variable.

Results in *Columns 4-6* indicate that the decision to become an entrepreneur is unrelated to an existing relationship with financial institutions, confirming that these institutions rarely finance entry into self-employment.<sup>9</sup> However, remittances from abroad exhibit a significantly negative effect on the probability of an individual becoming self-employed, in accordance with the “disincentive effects” of remittances noted in the literature. This effect is economically significant – an individual who switches from not

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<sup>9</sup> Since receivership of several types of loans and remittance money are not mutually exclusive, we have also conducted the analysis incorporating one variable at a time. All results presented are robust to these separate specifications and are available upon request. The inclusion of interaction terms between wealth and the affiliation with financial institution renders insignificant estimates of these interaction terms. This is likely to reflect the general climate of distrust towards the financial institutions that exist in BiH. During the war all household savings vanished and after the war several informal pyramid schemes cost households money. Furthermore, the network of banks and microfinance institutions are still considered very expensive.

receiving overseas remittances to receiving payments is on average about 3.5% less likely to start a business. To the contrary, transfers from institutional sources, such as charities and potentially international NGO initiatives have a positive impact on the probability to become self-employed. These results hold with the inclusion of the wealth variable. This result is economically large – an unemployed individual who receives a grant is 13% more likely to become self-employed, while individuals employed in the formal and informal sector are 17% and 21% more likely to become self-employed, respectively. However, the use of these products is small in the overall sample (about 2% of individuals in our sample), which reduces the importance of this effect. Finally, we fail to see a positive effect of informal financing mechanisms – from friends or family – or formal microfinance institutions.

The results in Table 4 suggest an insignificant relationship between most formal sources of finance and the decision to start new business. Tables 5 and 6 examine the robustness of our main findings, by presenting (a) interaction effects between the key variables and (b) estimation results for separate groups of intuitive interest, respectively. Table 5 introduces interaction effects in the probit framework. An important point of caution is that in non-linear models, interaction effects can not be calculated in the same way as in linear regressions (Ai and Norton, 2003; Norton, Wang and Ai, 2004). Not accounting for the non-linearity can lead to misleading estimates of the interaction effect and can impact all sign, magnitude and significance of the coefficient of the interaction variable. We thus utilize the framework and routine provided by Norton, Wang and Ai (2004), to calculate interaction effects between key variables in Table 5.

The specifications are all similar to *Column 1* of Table 6, plus the two variables to be interacted and the interaction term. A summary of the interaction terms suggests a negative correlation between informal sources of finance and wealth. This is the case for informal loans and domestic remittances. The interaction term exerts a negative impact on the transition to self-employment, significant at the 10% level. The second significant interaction effect worth mentioning is the interaction between microcredit schemes and labor market origins. Informal sector employees provided with a micro-loan are significantly more likely to start their own business. This is not the case with formal-sector-employees and those not previously employed, none of which is observed to

become self-employed when provided with a loan from a micro-credit scheme. Furthermore, while interactions between formal means of finance and labor origins are not observed to be significant, the averages in the table suggest that informal sector employees are much less likely to be granted access to formal finance.

In Table 6 we present estimates for three subsamples of individuals. First, in *Columns 1-2*, we include only the sample of the 2001 household heads. Most findings persist, except for the gender and education differentials. Furthermore, more household heads appear to be initiating self-employment activities in RS. In addition, at the household head level, the effect of receiving overseas remittances is no longer significant, although the coefficient is still negative. However, transfers from NGOs continue to have a positive impact on self-employment in the sample of household heads. *Columns 3 and 4* exclude farmers in our 2001 sample and find that all prior results are robust. In particular, we find that self-employed individuals continue to be significantly more likely to transition from the informal sector, which suggests that this result is not driven by possible employment diversification of farmers. Finally, *Columns 5 and 6* restrict the analysis to the sample of individuals in paid employment in 2001, either formally or in the informal sector, from which almost 80% of the inflows to self-employment are derived. We see that all findings hold and are further reinforced in these specifications. *Ceteris paribus*, informal sector employees are more likely to enter self-employment compared to employees in paid employment. The inclusion of both past wealth and past employment status, together with an interaction term between the two terms render all three variables insignificant indicating a significant negative correlation between wealth and informal sector activity. With respect to sources of finance, examination of the subsample of individuals employed in 2001 reinforces the magnitude of the negative impact of remittances from abroad and the positive effect of charity/NGO money.

In Table 7 we show results from a multinomial probit analysis, where the dependent variable takes a value of 0 if the individual switches to self-employment with employees (NEWSE-EMP), a value of 1 if the individual switches to self-employment without employees (NEWSE-OA), and the value of 2 if the individual never switches to self-employment. Results are consistent with the last Tables. However, there are some interesting differences. For instance, only entrepreneurs with employees are significantly

more optimistic, which might indicate the willingness to take a risk not only on your own behalf but also on the livelihood of others. In addition, only own account entrepreneurs are less likely to receive a pension and only employers are significantly less likely to switch from unemployment. Furthermore, only employers are significantly less likely to receive remittances from abroad, which adds further evidence that remittances many not be used for productive purposes. Finally, results indicate that bank loan affiliation is associated with employment creation upon entering self-employment. Reasonably, larger firms require greater up-front capital.

## **5. Firm Survival**

### **5.1 *Self-employment Performance***

The literature has examined several definitions and measures of success and performance in self-employment, such as self-employment earnings, firm size, employment creation, firm growth, and longevity in self-employment, defined either as years of duration in business or as survival during a particular time interval. Given the fact that our panel only covers the period 2001-2004, we examine the individual-specific determinants of survival in self-employment for more than one year<sup>10</sup>. Table 2 has already indicated that 47.8% of individuals (53.1% of household heads) becoming self-employed during the years 2002-2003 in BiH quit their new entrepreneurial venture during their first year of activity. It is well-known that new entrepreneurs bear the highest risk of failure during their first few years of activity. Although firm and sector-specific determinants are also of vital importance, the nature of the database only enables individual-specific analysis. Given the particularities of BiH's labor market and business environment, the determinants of small business viability are of great interest to authorities, the international institutions that have been involved in reforming the regulatory environment, as well as commercially oriented institutions, such as banks and microcredit institutions. Ex ante evaluation of firm survival rates can offer information on which firms are more likely to survive and benefit from being granted funding with a

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<sup>10</sup> Observations of an individual in self-employment for two consecutive years do not necessarily establish survival in the same entrepreneurial activity. In order to ensure that survival in self-employment is captured we consider as "survivors", individuals declaring their status as self-employed in at least two consecutive years and with activity tenure more than a year in the second year of observation.

loan or other sources of microfinance. Firms that survive the market selection process in the first years of existence are the ones the economy might actually benefit from.

With respect to the individual-specific determinants of self-employment survival, Cooper et al. (1994) find that firms with a male entrepreneur have a greater probability of high growth, but not of survival. Other studies have shown that the probability of survival increases with firm's age, and further with owner's age and education (Parker, 2004). Jovanovic (1982) has described that entrepreneurs with higher human capital might be faced with less uncertainty and learn faster about market conditions and adjusting capacity, therefore reducing the probability of exit.

With respect to financial variables, the evidence is often mixed: Using U.S. data, Holtz-Eakin et al. (1994) find that liquidity constraints play a key role in small firm viability; Astebrö and Bernhardt (2003) find a negative correlation between having a bank loan and small business survival and a positive correlation between having a non-bank loan and survival. In contrast, Fazzzylber et al (2006) find that formal credit, such as bank loans, is significant in explaining firm survival in Mexico. Cressy (1996) uses U.K. data to assert that the correlation between access to finance and survival is spurious, with human capital being the true driving force.

Concerning past employment history, if the main incentive for starting a business is a "pushing" mechanism out of unemployment-inactivity or self-subsistence activities, there may not be time to look for good opportunities, make detailed plans and seek for advice. Thus, independent from productivity and/or learning effects that occur after start-up, chances of survival may be affected by selection effects occurring prior to start-up. On the other hand individuals starting from employment are more likely to be in a position to raise more capital and set up larger and better equipped businesses, based on their higher earnings and more prestigious professional status as employees.

## 5.2 Results

In this section we examine the post-entry performance of individuals becoming self-employed in BiH during the period 2002-2003. In order to examine the determinants of survival of the new self-employed within their first year in business, we employ a probit model with sample selection (van de Ven and van Praag, 1981). Results in Table 8

present marginal effects from Heckman two-step probit equations.<sup>11</sup> In the first stage, we estimate the probability of becoming self-employed in the years 2002-2003. Our specifications are similar to those in *Columns 2, 3, 5 and 6* of Table 4. In the second stage we estimate the probability of remaining self-employed in the year following that of transition. The dependent variable is a dummy variable coded 1 if the respondent remained self-employed in the following year and 0 if not. As identifying restrictions in the second stage equation, we exclude the variables capturing optimism and pension receivership. Besides satisfying the statistical criteria, it seems intuitive that those two variables, captured in the beginning of the panel, will have an effect on the decision to become self-employed, but will not affect entrepreneurial outcomes in any way. Wald  $\chi^2$  test-statistics testing the null hypothesis of independent equations reject the null in Table 8, rendering a positive correlation coefficient between the two equations. This indicates that unobserved variables such as ability, talent etc. that positively affect the decision to become self-employed also exhibit a positive impact on the survival chances of the new business ventures.

Income as measured by household consumption at the initial year in the panel has a persistently positive effect in the survival equation, indicating that higher potential of self-financing is an essential component of self-employment activity and longevity in BiH. Among the variables capturing sources of finance and membership in financial institutions, it is the bank loan variable that exerts a significantly positive effect in the survival equation. This finding is further reinforced by the positive impact of the variable capturing transfers from NGO programs. This could be attributed to the good screening mechanisms of the financial institutions with respect to the entrepreneurial prospects of the individuals they choose to finance. Hence, while the decision to become an entrepreneur is not related to financing from banks, the ability to survive is significantly increased by an existing relationship with a bank. Consistent with our earlier findings, domestic remittances and social benefits discourage entrepreneurship and do not improve the probability of success.

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<sup>11</sup> We also estimated a Multinomial Probit model (self-employed/survivor, self-employed/failed, not self-employed) and our main results proved robust (not shown).

Other results verify that men and urban area residents are more likely to survive the difficult first year in self-employment. A positive concave relationship exists with age, but the maximum occurs at a younger age compared to the first stage equation. Education increases the probability of survival *ceteris paribus*, and so do previous self-employment experience and the existence of another self-employed member in the household.

With respect to the past employment origins of the “survivors”, the results indicate that the informal sector is likely to act as an “incubator” of formal entrepreneurial ventures in the early years of transition. Informal sector employees are more likely to become self-employed than formal sector employees, and further more likely to make it through their first year.

## **6. Conclusions**

We examine the factors affecting the transition to self-employment and the viability of transitions in the short-run in BiH, employing a longitudinal household survey for the years 2001-2004. This is an interesting case study, since in 2000-2001 several regulatory changes concerning the financial and business environment, as well as the labor market, were implemented. Although the aggregate proportion of the self-employed labor force did not increase over the sample period, examining transitions into self-employment indicated that even after controlling for the role of individual and social characteristics, financing constraints played an important role in promoting entry into self-employment and its success. Specifically, wealthier households are more likely to become entrepreneurs and survive the early period in business, emphasizing the importance of internal finance. Variables indicating financial institution customer affiliation, in terms of loans from formal financial institutions, or even informal sources that one needs to repay, have insignificant impact on self-employment transitions, but a positive effect on sustainable self-employment. Particularly an existing prior relationship with a bank significantly increases the chances of survival for new entrepreneurs, suggesting that while banks rarely finance entry decisions, they are still instrumental in survival.

Furthermore, our results indicate that individuals working in the informal sector are more likely to transition to formal sector self-employment and are more likely to be successful as entrepreneurs. Further interactions between prior labor market status and access to finance measures indicate that informal sector employees are more likely to have access to informal sources of finance, rather than from formal institutions. However, the interaction term between loans from micro-credit schemes and informal sector employment exerts a significantly positive impact to new business start-ups. This indicates that this particular means of poverty alleviation and venture support, sponsored by the international community, has worked in the direction of promoting new start-ups and alleviating financial exclusion of particular population groups. These results can be thought to support the perception of informal sector as an incubator for self-employment in the formal sector in the early years of transition, through which individuals acquire skills that can facilitate their future entrepreneurial activities.

Finally, we find that overseas – and in some case domestic – remittances significantly decrease the likelihood of becoming an entrepreneur. These results support the disincentive effects that were documented in the earlier literature. However, the large migration from Bosnia during the war might make this a special case, where families receiving remittances are less likely to invest in local businesses as they hope to join family overseas. Interestingly, NGO and government supported programs that provide grants and transfers to promote entrepreneurship seem to have worked not only in promoting entrepreneurship but also its success, however less than 2% of our sample had access to these service.



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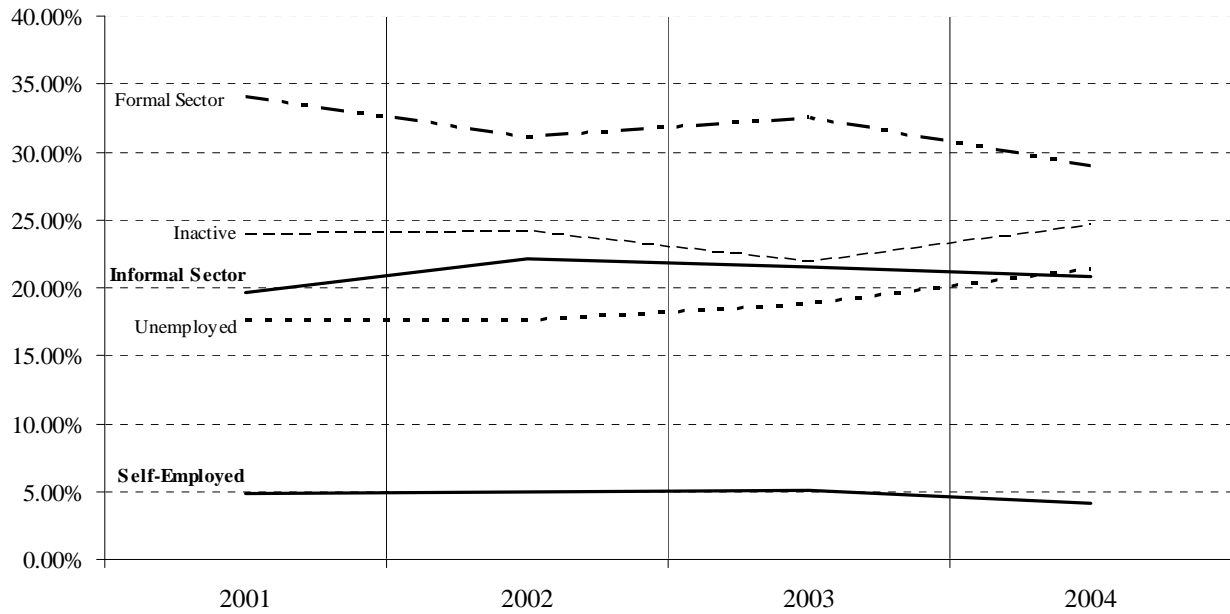
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**Figure 1: Labor Force Composition (LSMS, 2001-2004)**



**Table 1: Labor Force Composition in Bosnia and Herzegovina**  
("Living in Bosnia and Herzegovina", 2001-2004 averages)

|                        | <b>BiH</b>    | <b>FBiH</b>   | <b>RS</b>     |
|------------------------|---------------|---------------|---------------|
| <b>Self-Employed</b>   | <b>4.76%</b>  | <b>4.26%</b>  | <b>5.35%</b>  |
| <i>Employers</i>       | 2.20%         | 2.05%         | 2.37%         |
| <i>Own-Account</i>     | 2.56%         | 2.21%         | 2.98%         |
| <b>Paid Employees</b>  | <b>52.75%</b> | <b>49.54%</b> | <b>56.60%</b> |
| <i>Formal Sector</i>   | 31.71%        | 31.94%        | 31.43%        |
| <i>Informal Sector</i> | 21.04%        | 17.60%        | 25.17%        |
| <b>Non-Employed</b>    | <b>42.49%</b> | <b>46.20%</b> | <b>38.05%</b> |
| <i>Unemployed</i>      | 18.85%        | 18.69%        | 19.06%        |
| <i>Inactive</i>        | 23.64%        | 27.51%        | 18.99%        |
| No. Observations       | 21,035        | 11,468        | 9,567         |
| No. Individuals        | 5,599         | 3,085         | 2,530         |

Source: World Bank Living Standards Measurement Study (LSMS), (2001, 2002, 2003, 2004)

| <b>Table 2: New entries to self-employment and exits of new entrants within one year</b><br>(Individuals not self-employed in 2001) |  |   |  |
|---|--|---|--|
|   | <b>New Entrants</b><br>(%S.E. <sub>t</sub> ) | <b>Exits</b><br>(%N.E. <sub>t-1</sub> ) | <b>Survival</b><br>(%N.E. <sub>t-1</sub> ) |
| <b><u>NEW SELF-EMPLOYED</u></b>   |  |   |  |
| <b>Total BiH</b>  | <b>229</b>                                   | <b>88 (47.8%)</b>                       | <b>96 (52.2%)</b>                          |
| <b><u>EMPLOYERS</u></b>   |  |   |  |
| <b>Total BiH</b>  | <b>98</b>                                    | <b>37 (43.5%)</b>                       | <b>48 (56.5%)</b>                          |
| <b><u>OWN-ACCOUNT</u></b>   |  |   |  |
| <b>Total BiH</b>  | <b>131</b>                                   | <b>51 (51.5%)</b>                       | <b>48 (48.5%)</b>                          |

Source: World Bank Living Standards Measurement Study (LSMS), (2001, 2002, 2003, 2004)

**Table 3: Sample averages and mean differences**

|  | NEWSE<br>[229] | NEWSE-<br>EMPL<br>[98] | NEWSE- OA<br>[131] | Never<br>Self-Emp<br>[5,108] | t-test: SE<br>(1) vs. (4) | t-test<br>(2) vs. (3) |
|--|----------------|------------------------|--------------------|------------------------------|---------------------------|-----------------------|
|  | (1)            | (2)                    | (3)                | (4)                          | (5)                       | (6)                   |
| <i>Individual and Household Characteristics:</i> |                |                        |                    |                              |                           |                       |
| MALE   | 69.00%         | 60.20%                 | 75.57%             | 50.49%                       | 5.50 ***                  | -2.51 **              |
| AGE  | 37.67          | 37.81                  | 37.57              | 35.71                        | 2.25 **                   | 0.16                  |
| FBIH   | 49.34%         | 48.98%                 | 49.62%             | 55.62%                       | -1.87 *                   | -0.10                 |
| URBAN  | 51.09%         | 55.10%                 | 48.09%             | 43.75%                       | 2.19 **                   | 1.05                  |
| MARRIED  | 75.55%         | 78.57%                 | 73.28%             | 60.28%                       | 4.64 ***                  | 0.92                  |
| LCHILDREN  | 0.79           | 0.77                   | 0.80               | 0.65                         | 3.42 ***                  | -0.46                 |
| EDLOW  | 21.83%         | 17.35%                 | 25.19%             | 34.83%                       | -4.06 ***                 | -1.42                 |
| DISABLED   | 2.62%          | 1.02%                  | 3.82%              | 4.70%                        | -1.47                     | -1.31                 |
| GHEALTH  | 49.34%         | 59.18%                 | 41.98%             | 37.24%                       | 3.70 ***                  | 2.60 ***              |
| PASTSE   | 12.23%         | 14.29%                 | 10.69%             | 1.70%                        | 10.85 ***                 | 0.82                  |
| OPTIMISM   | 92.50%         | 93.48%                 | 91.76%             | 90.07%                       | 3.35 ***                  | 1.59                  |
| NOSCPTL  | 6.11%          | 9.18%                  | 3.82%              | 20.22%                       | -5.27 ***                 | 1.68 *                |
| PENSION  | 36.24%         | 47.96%                 | 27.48%             | 34.30%                       | 0.61                      | 3.25 ***              |
| INFORMAL   | 37.55%         | 23.47%                 | 48.09%             | 20.09%                       | 6.39 ***                  | -3.92 ***             |
| NONEMPLOYED                                      | 21.40%         | 20.41%                 | 22.14%             | 44.95%                       | -7.06 ***                 | -0.31                 |
| OTHSE  | 16.59%         | 13.27%                 | 19.08%             | 6.25%                        | 6.15 ***                  | -1.17                 |
| HSOWN  | 69.87%         | 72.45%                 | 67.94%             | 67.80%                       | 0.66                      | 0.73                  |
| PROPERTY   | 22.71%         | 20.41%                 | 24.43%             | 16.64%                       | 2.40 **                   | -0.72                 |
| LHHCONS  | 8.04           | 8.13                   | 7.96               | 7.82                         | 6.16 ***                  | 2.47 **               |
| <i>Wealth and Financial Characteristics:</i>     |                |                        |                    |                              |                           |                       |
| INFORMLOAN                                       | 16.16%         | 10.20%                 | 20.61%             | 17.17%                       | -0.40                     | -2.13 **              |
| MICROLOAN  | 2.62%          | 3.06%                  | 2.29%              | 2.55%                        | 0.07                      | 0.36                  |
| BANKLOAN   | 13.97%         | 20.41%                 | 9.16%              | 11.51%                       | 1.14                      | 2.45 **               |
| REJLOAN  | 11.35%         | 8.16%                  | 13.74%             | 10.57%                       | 0.38                      | -1.32                 |
| REMITDOM   | 5.24%          | 3.06%                  | 6.87%              | 8.59%                        | -1.79 *                   | -1.28                 |
| REMITABROAD                                      | 6.99%          | 2.04%                  | 10.69%             | 11.57%                       | -2.14 **                  | -2.56 **              |
| GRANT  | 2.62%          | 2.04%                  | 3.05%              | 2.06%                        | 0.59                      | -0.47                 |
| SOCIALSERV                                       | 22.71%         | 20.41%                 | 24.43%             | 27.68%                       | -1.65 *                   | -0.72                 |
| <i>Interactions</i>                              |                |                        |                    |                              |                           |                       |
| LHHCONS*INFORMAL                                 | 3.02           | 1.95                   | 3.82               | 1.55                         | 6.88 ***                  | -3.68 ***             |
| LHHCONS*UNEMPLOYED                               | 1.74           | 1.66                   | 1.80               | 3.46                         | -6.61 ***                 | -0.30                 |

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Source: World Bank LSMS (2001-04). See Table 3 for variable definitions.

| <b>Table 4: The determinants of the transition to self-employment</b><br>Probit regressions, dependent variable: (1/0) New self-employed/Not |                     |                     |                     |                     |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
|  | (1)                 | (2)                 | (3)                 | (4)                 | (5)                 | (6)                 |
| MALE   | 0.028<br>[5.93]***  | 0.030<br>[6.11]***  | 0.022<br>[4.88]***  | 0.029<br>[6.01]***  | 0.030<br>[6.21]***  | 0.022<br>[4.98]***  |
| FBIH   | -0.006<br>[1.29]    | -0.006<br>[1.16]    | -0.003<br>[0.72]    | -0.007<br>[1.53]    | -0.007<br>[1.47]    | -0.005<br>[0.98]    |
| AGE  | 0.006<br>[4.45]***  | 0.006<br>[4.07]***  | 0.005<br>[3.60]***  | 0.006<br>[4.53]***  | 0.006<br>[4.17]***  | 0.005<br>[3.72]***  |
| AGESQ/1,000  | -0.070<br>[4.16]*** | -0.069<br>[3.96]*** | -0.057<br>[3.40]*** | -0.069<br>[4.22]*** | -0.069<br>[4.07]*** | -0.056<br>[3.52]*** |
| URBAN  | 0.008<br>[1.69]*    | 0.008<br>[1.65]*    | 0.010<br>[1.99]**   | 0.008<br>[1.58]     | 0.007<br>[1.51]     | 0.009<br>[1.89]*    |
| MARRIED  | 0.010<br>[1.54]     | 0.012<br>[1.79]*    | 0.009<br>[1.44]     | 0.010<br>[1.62]     | 0.013<br>[1.94]*    | 0.009<br>[1.52]     |
| LCHILDREN  | 0.002<br>[0.31]     | 0.005<br>[0.82]     | 0.002<br>[0.40]     | 0.002<br>[0.28]     | 0.005<br>[0.85]     | 0.002<br>[0.34]     |
| EDUCLOW  | -0.015<br>[3.00]*** | -0.013<br>[2.54]**  | -0.015<br>[3.28]*** | -0.015<br>[3.11]*** | -0.013<br>[2.66]*** | -0.015<br>[3.39]*** |
| DISABLED   | -0.017<br>[2.53]**  | -0.016<br>[2.30]**  | -0.017<br>[2.79]*** | -0.016<br>[2.47]**  | -0.015<br>[2.23]**  | -0.016<br>[2.80]*** |
| PASTSE   | 0.190<br>[4.33]***  | 0.178<br>[4.01]***  | 0.155<br>[3.80]***  | 0.186<br>[4.27]***  | 0.174<br>[3.94]***  | 0.150<br>[3.73]***  |
| OPTIMISM   | 0.062<br>[2.61]***  | 0.051<br>[2.08]**   | 0.061<br>[2.64]***  | 0.060<br>[2.58]***  | 0.047<br>[1.96]*    | 0.059<br>[2.59]***  |
| NOSOCPTL   | -0.025<br>[5.91]*** | -0.024<br>[5.42]*** | -0.024<br>[5.86]*** | -0.026<br>[6.43]*** | -0.025<br>[5.98]*** | -0.024<br>[6.38]*** |
| PENSION  | -0.011<br>[2.29]**  | -0.014<br>[2.94]*** | -0.008<br>[1.31]    | -0.012<br>[2.64]*** | -0.015<br>[3.34]*** | -0.009<br>[1.48]    |
| OTHERSE  | 0.061<br>[3.63]***  | 0.050<br>[3.27]***  | 0.060<br>[3.67]***  | 0.060<br>[3.55]***  | 0.048<br>[3.17]***  | 0.059<br>[3.60]***  |
| LHHCONS  | -                   | 0.021<br>[4.59]***  | -                   | -                   | 0.022<br>[4.88]***  | -                   |
| INFORMAL   | -                   | -                   | 0.019<br>[2.05]**   | -                   | -                   | 0.020<br>[2.07]**   |
| NONEMPLOYED  | -                   | -                   | -0.012<br>[1.75]*   | -                   | -                   | -0.011<br>[1.68]*   |
| INFORMLOAN   | -                   | -                   | -                   | -0.002<br>[0.32]    | -0.005<br>[0.84]    | -0.002<br>[0.39]    |
| MICROLOAN  | -                   | -                   | -                   | -0.005<br>[0.43]    | -0.006<br>[0.59]    | -0.007<br>[0.76]    |
| BANKLOAN   | -                   | -                   | -                   | 0.010<br>[1.21]     | 0.009<br>[1.03]     | 0.009<br>[1.15]     |
| REMITDOM   | -                   | -                   | -                   | -0.009<br>[1.44]    | -0.008<br>[1.26]    | -0.008<br>[1.25]    |
| REMITABROAD  | -                   | -                   | -                   | -0.012<br>[2.20]**  | -0.013<br>[2.50]**  | -0.012<br>[2.21]**  |
| GRANT  | -                   | -                   | -                   | 0.069<br>[1.92]*    | 0.091<br>[2.16]**   | 0.076<br>[1.97]**   |
| SOCIALSERV   | -                   | -                   | -                   | -0.0003<br>[0.05]   | 0.001<br>[0.14]     | -0.00003<br>[0.01]  |
| No. of Individuals   | 5,277               | 5,051               | 5,277               | 5,277               | 5,051               | 5,277               |
| Observed Transitions   | 229                 | 228                 | 229                 | 229                 | 228                 | 229                 |
| Pseudo R2  | 0.121               | 0.131               | 0.135               | 0.129               | 0.141               | 0.143               |
| Log-Likelihood   | -827.9              | -807.2              | -815.4              | -820.6              | -798.4              | -807.8              |
| Log-Lik. at 1st iteration  | -942.4              | -929.1              | -942.4              | -942.4              | -929.1              | -942.4              |
| Wald x2  | 194.9***            | 192.2***            | 213.5***            | 223.2***            | 218.0***            | 235.9***            |

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Source: World Bank LSMS (2001-04). See Table 3 for variable definitions.

Marginal Effects and Robust z-statistics of the coefficients, in absolute values, are presented in parentheses.

Standard Errors are clustered at the household level.

For dummy variables, the difference in the predicted value of the dependent variable for discrete changes (0 → 1) is reported. For continuous variables, the derivatives of the predicted dependent variable for small changes in the exogenous variables are reported



**Table 5: Interaction Effects**

Probit regressions, dependent variable: (1/0) New self-employed/Not  
Coefficients [z-statistics] / Means if *Variable*==1 (Standard Deviations)

| <i>Variable</i> | <i>LHHCONSxVariable</i> |                  | <i>POORxVariable</i> |                  | <i>FORMALxVariable</i> |                  | <i>INFORMALxVariable</i> |                  | <i>UNEMPLOYEDxVariable</i> |                  |
|-----------------|-------------------------|------------------|----------------------|------------------|------------------------|------------------|--------------------------|------------------|----------------------------|------------------|
| FORMAL          | -0.019<br>7.92          | [1.31]<br>(0.51) | 0.008<br>18.51%      | [0.62]<br>(0.39) | -                      |                  | -                        |                  | -                          |                  |
| INFORMAL        | 0.008<br>7.84           | [0.78]<br>(0.55) | 0.012<br>26.71%      | [0.55]<br>(0.44) | -                      |                  | -                        |                  | -                          |                  |
| UNEMPLOYED      | 0.009<br>7.75           | [0.08]<br>(0.50) | -0.013<br>30.36%     | [0.96]<br>(0.46) | -                      |                  | -                        |                  | -                          |                  |
| INFORMLOAN      | -0.022*<br>7.87         | [1.72]<br>(0.55) | 0.002<br>25.27%      | [0.14]<br>(0.43) | -0.002<br>31.40%       | [0.13]<br>(0.46) | -0.017<br>27.13%         | [0.85]<br>(0.44) | 0.012<br>41.47%            | [0.84]<br>(0.49) |
| MICROLOAN       | -0.004<br>7.96          | [0.16]<br>(0.45) | 0.019<br>19.12%      | [0.46]<br>(0.39) | (NEW_SE=0)<br>34.56%   | (0.48)           | 0.110*<br>23.53%         | [1.82]<br>(0.43) | (NEW_SE=0)<br>41.91%       | (0.50)           |
| BANKLOAN        | -0.001<br>7.92          | [0.06]<br>(0.47) | 0.027<br>20.00%      | [0.98]<br>(0.40) | -0.028<br>47.74%       | [1.39]<br>(0.50) | 0.033<br>15.32%          | [0.94]<br>(0.36) | 0.012<br>36.94%            | [0.59]<br>(0.48) |
| REMITDOM        | -0.032*<br>7.81         | [1.67]<br>(0.49) | 0.046**<br>25.28%    | [1.98]<br>(0.44) | 0.010<br>27.27%        | [0.54]<br>(0.45) | -0.009<br>17.74%         | [0.41]<br>(0.38) | 0.002<br>54.99%            | [0.22]<br>(0.50) |
| REMITABROAD     | -0.008<br>7.87          | [0.78]<br>(0.49) | 0.023<br>20.76%      | [1.16]<br>(0.41) | -0.017<br>31.96%       | [1.03]<br>(0.47) | 0.004<br>20.10%          | [0.09]<br>(0.40) | 0.016<br>47.94%            | [1.09]<br>(0.50) |
| GRANT           | 0.007<br>7.60           | [0.18]<br>(0.55) | -0.011<br>34.23%     | [0.19]<br>(0.48) | 0.127<br>22.52%        | [1.33]<br>(0.42) | (NEW_SE=0)<br>12.61%     | (0.33)           | -0.029<br>64.86%           | [0.44]<br>(0.48) |
| SOCIALSERV      | -0.0004<br>7.81         | [0.01]<br>(0.51) | 0.002<br>25.99%      | [0.14]<br>(0.44) | -0.012<br>26.47%       | [0.87]<br>(0.44) | 0.00003<br>21.96%        | [0.01]<br>(0.41) | 0.010<br>51.57%            | [0.75]<br>(0.50) |

\* p<0.10, \*\* p<0.05, \*\*\* p<0.01

Source: World Bank LSMS (2001-04). See Table 3 for variable definitions.

Standard Errors are clustered at the household level.

The specifications are as in Column1 of Table 6, plus *Variable*, *Interaction Variable* and *Interaction Term*.

The calculation of the interaction effects are based on Ai and Norton (2003), Norton and Ai (2004).

| <b>Table 6: Robustness Regressions</b><br>[Probit regressions, dependent variable: (1/0) New self-employed/Not] |                 |           |                   |           |                           |           |
|---|-----------------|-----------|-------------------|-----------|---------------------------|-----------|
|   | Household Heads |           | Excluding Farmers |           | Formally Employed in 2001 |           |
|   | (1)             | (2)       | (3)               | (4)       | (5)                       | (6)       |
| MALE  | 0.014           | 0.009     | 0.031             | 0.022     | 0.033                     | 0.030     |
|   | [0.93]          | [0.56]    | [6.19]***         | [4.89]*** | [4.38]***                 | [4.06]*** |
| FBiH  | -0.018          | -0.012    | -0.006            | -0.003    | -0.004                    | -0.004    |
|   | [1.83]*         | [1.24]    | [1.19]            | [0.76]    | [0.44]                    | [0.54]    |
| AGE   | 0.008           | 0.007     | 0.006             | 0.005     | 0.004                     | 0.006     |
|   | [2.21]**        | [1.88]*   | [4.11]***         | [3.65]*** | [1.59]                    | [2.27]**  |
| AGESQ/1,000   | -0.103          | -0.086    | -0.069            | -0.055    | -0.053                    | -0.066    |
|   | [2.39]**        | [1.97]**  | [3.98]***         | [3.39]*** | [1.66]*                   | [2.20]**  |
| URBAN   | 0.020           | 0.023     | 0.008             | 0.009     | 0.020                     | 0.021     |
|   | [1.98]**        | [2.25]**  | [1.56]            | [1.86]*   | [2.22]**                  | [2.43]**  |
| MARRIED   | 0.035           | 0.033     | 0.016             | 0.012     | 0.021                     | 0.018     |
|   | [2.96]***       | [2.69]*** | [2.49]**          | [2.06]**  | [2.00]**                  | [1.82]*   |
| LCHILDREN   | -0.002          | -0.014    | 0.002             | -0.001    | 0.006                     | 0.002     |
|   | [0.19]          | [1.26]    | [0.34]            | [0.18]    | [0.58]                    | [0.21]    |
| EDUCLOW   | -0.012          | -0.020    | -0.013            | -0.014    | -0.014                    | -0.020    |
|   | [1.18]          | [2.02]**  | [2.57]**          | [3.14]*** | [1.53]                    | [2.31]**  |
| DISABLED  | -0.031          | -0.034    | -0.016            | -0.016    | -0.017                    | -0.020    |
|   | [2.63]***       | [3.33]*** | [2.31]**          | [2.82]*** | [1.21]                    | [1.61]    |
| PASTSE  | 0.100           | 0.089     | 0.212             | 0.181     | 0.148                     | 0.143     |
|   | [2.12]**        | [1.99]**  | [3.87]***         | [3.67]*** | [3.25]***                 | [3.23]*** |
| OPTIMISM  | 0.114           | 0.117     | 0.049             | 0.064     | 0.064                     | 0.089     |
|   | [2.42]**        | [2.45]**  | [2.06]**          | [2.81]*** | [1.51]                    | [2.17]**  |
| NOSCPTL   | -0.024          | -0.024    | -0.024            | -0.023    | -0.040                    | -0.039    |
|   | [2.04]**        | [2.07]**  | [5.78]***         | [6.06]*** | [5.18]***                 | [5.39]*** |
| PENSION   | -0.041          | -0.010    | -0.017            | -0.010    | -0.036                    | -0.015    |
|   | [3.43]***       | [0.74]    | [3.69]***         | [1.65]*   | [3.85]***                 | [1.25]    |
| OTHERSE   | -               | -         | 0.045             | 0.056     | 0.069                     | 0.077     |
|   |                 |           | [3.04]***         | [3.46]*** | [2.67]***                 | [2.90]*** |
| LHHCONS   | 0.042           | -         | 0.022             | -         | 0.025                     | -         |
|   | [4.38]***       |           | [4.93]***         |           | [3.11]***                 |           |
| INFORMAL  | -               | 0.063     | -                 | 0.022     | -                         | 0.029     |
|   |                 | [2.83]*** |                   | [2.10]**  |                           | [2.23]**  |
| NONEMPLOYED   | -               | -0.008    | -                 | -0.011    | -                         | -         |
|   |                 | [0.53]    |                   | [1.65]*   |                           |           |
| INFORMLOAN  | -0.021          | -0.019    | -0.003            | -0.0005   | -0.011                    | -0.007    |
|   | [1.95]*         | [1.78]*   | [0.52]            | [0.08]    | [1.11]                    | [0.70]    |
| MICROLOAN   | 0.022           | 0.007     | -0.005            | -0.006    | 0.008                     | 0.004     |
|   | [0.58]          | [0.24]    | [0.45]            | [0.63]    | [0.32]                    | [0.17]    |
| BANKLOAN  | -0.012          | -0.010    | 0.007             | 0.008     | 0.003                     | 0.005     |
|   | [0.90]          | [0.70]    | [0.81]            | [0.97]    | [0.27]                    | [0.38]    |
| REMITDOM  | 0.010           | 0.011     | -0.011            | -0.010    | -0.009                    | -0.009    |
|   | [0.47]          | [0.55]    | [1.82]*           | [1.66]*   | [0.62]                    | [0.70]    |
| REMITABROAD   | -0.017          | -0.013    | -0.015            | -0.014    | -0.023                    | -0.022    |
|   | [1.50]          | [1.06]    | [3.00]***         | [2.73]*** | [2.48]**                  | [2.43]**  |
| GRANT   | 0.160           | 0.176     | 0.101             | 0.082     | 0.142                     | 0.109     |
|   | [1.91]*         | [2.01]**  | [2.23]**          | [2.02]**  | [1.72]*                   | [1.49]    |
| REMITSOCIAL   | 0.019           | 0.012     | 0.0003            | -0.0004   | -0.002                    | -0.005    |
|   | [1.46]          | [0.93]    | [0.06]            | [0.09]    | [0.26]                    | [0.54]    |
| No. of obs.   | 1,839           | 1,842     | 4,824             | 5,050     | 2,856                     | 2,967     |
| No. of households   |                 |           | 2,182             | 2,368     | 1,760                     | 1,855     |
| Pseudo R2   | 0.109           | 0.109     | 0.149             | 0.151     | 0.101                     | 0.098     |
| Log-Likelihood  | -392.9          | -392.9    | -752.8            | -762.4    | -601.6                    | -612.5    |
| Log-Likelihood at 1st iteration   | -440.9          | -441.1    | -885.1            | -898.3    | -669.1                    | -678.8    |
| Wald x2   | 82.6***         | 108.3***  | 212.7***          | 234.2***  | 113.4***                  | 116.1***  |

Source: World Bank LSMS (2001-04). See Table 3 for variable definitions.

Notes in Table 6 apply.

| <b>Table 7: Multinomial probit regressions</b>                                     |                     |                     |                     |                     |                     |                     |
|--|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Dependent variable: (1) New S.E. employer, (2) New S.E. own-account (3) Never S.E. |                     |                     |                     |                     |                     |                     |
|  | (1)                 |                     |                     | (2)                 |                     |                     |
|  | (1a)                | (1b)                | (1c)                | (2a)                | (2b)                | (2c)                |
|  | EMPLOYERS           | OWN ACCOUNT         | NOT S.E.            | EMPLOYERS           | OWN ACCOUNT         | NOT S.E.            |
| MALE   | 0.005<br>[2.05]**   | 0.024<br>[6.27]***  | -0.029<br>[6.45]*** | 0.003<br>[1.54]     | 0.018<br>[5.10]***  | -0.021<br>[5.12]*** |
| FBIH   | -0.004<br>[1.80]*   | -0.002<br>[0.57]    | 0.006<br>[1.51]     | -0.004<br>[1.54]    | 0.000<br>[0.09]     | 0.004<br>[1.07]     |
| AGE  | 0.002<br>[3.30]***  | 0.002<br>[2.71]***  | -0.005<br>[4.14]*** | 0.002<br>[3.13]***  | 0.002<br>[2.31]**   | -0.004<br>[3.79]*** |
| AGESQ/1,000  | -0.031<br>[3.35]*** | -0.029<br>[2.59]*** | 0.061<br>[4.05]***  | -0.029<br>[3.01]*** | -0.022<br>[2.18]**  | 0.051<br>[3.60]***  |
| URBAN  | 0.003<br>[1.10]     | 0.004<br>[1.03]     | -0.006<br>[1.45]    | 0.003<br>[1.27]     | 0.004<br>[1.32]     | -0.008<br>[1.80]*   |
| MARRIED  | 0.007<br>[2.23]**   | 0.004<br>[0.79]     | -0.011<br>[1.79]*   | 0.006<br>[1.93]*    | 0.002<br>[0.52]     | -0.008<br>[1.50]    |
| LCHILDREN  | 0.000<br>[0.12]     | 0.006<br>[1.21]     | -0.005<br>[0.96]    | -0.002<br>[0.81]    | 0.004<br>[1.05]     | -0.002<br>[0.41]    |
| EDUCLOW  | -0.005<br>[2.14]**  | -0.006<br>[1.74]*   | 0.011<br>[2.63]***  | -0.006<br>[2.31]**  | -0.007<br>[2.45]**  | 0.013<br>[3.32]***  |
| DISABLED   | -0.008<br>[3.16]*** | -0.005<br>[0.93]    | 0.013<br>[2.13]**   | -0.008<br>[3.52]*** | -0.006<br>[1.44]    | 0.014<br>[2.95]***  |
| PASTSE   | 0.084<br>[2.79]***  | 0.077<br>[2.52]**   | -0.160<br>[3.76]*** | 0.092<br>[2.91]***  | 0.053<br>[2.17]**   | -0.145<br>[3.65]*** |
| OPTIMISM   | 0.029<br>[2.04]**   | 0.012<br>[0.78]     | -0.041<br>[1.94]*   | 0.034<br>[2.43]**   | 0.018<br>[1.25]     | -0.053<br>[2.57]**  |
| NOSOCPTL   | -0.005<br>[2.41]**  | -0.017<br>[6.07]*** | 0.023<br>[6.18]***  | -0.007<br>[2.93]*** | -0.015<br>[6.10]*** | 0.022<br>[6.48]***  |
| PENSION  | -0.001<br>[0.56]    | -0.013<br>[4.26]*** | 0.015<br>[3.57]***  | -0.002<br>[0.78]    | -0.006<br>[1.56]    | 0.009<br>[1.65]*    |
| OTHERSE  | 0.005<br>[1.07]     | 0.042<br>[2.97]***  | -0.047<br>[3.18]*** | 0.011<br>[1.80]*    | 0.045<br>[3.10]***  | -0.056<br>[3.59]*** |
| LHHCONS  | 0.011<br>[4.52]***  | 0.008<br>[2.53]**   | -0.019<br>[4.83]*** | -                   | -                   | -                   |
| INFORMAL   | -                   | -                   | -                   | -0.002<br>[0.44]    | 0.021<br>[2.42]**   | -0.020<br>[2.06]**  |
| NONEMPLOYED  | -                   | -                   | -                   | -0.007<br>[1.96]**  | -0.002<br>[0.37]    | 0.009<br>[1.45]     |
| INFORMLOAN   | -0.005<br>[2.29]**  | 0.002<br>[0.39]     | 0.004<br>[0.72]     | -0.005<br>[1.84]*   | 0.003<br>[0.70]     | 0.002<br>[0.36]     |
| MICROLOAN  | -0.001<br>[0.10]    | -0.005<br>[0.75]    | 0.006<br>[0.60]     | 0.0001<br>[0.01]    | -0.006<br>[1.18]    | 0.006<br>[0.68]     |
| BANKLOAN   | 0.008<br>[1.62]     | -0.002<br>[0.37]    | -0.006<br>[0.88]    | 0.009<br>[1.70]*    | -0.002<br>[0.33]    | -0.008<br>[1.08]    |
| REMITDOM   | -0.004<br>[1.28]    | -0.004<br>[0.87]    | 0.008<br>[1.46]     | -0.005<br>[1.32]    | -0.003<br>[0.82]    | 0.008<br>[1.47]     |
| REMITABROAD  | -0.009<br>[4.68]*** | -0.002<br>[0.50]    | 0.011<br>[2.39]**   | -0.009<br>[4.48]*** | -0.001<br>[0.34]    | 0.011<br>[2.32]**   |
| GRANT  | 0.034<br>[1.23]     | 0.049<br>[1.54]     | -0.083<br>[2.12]**  | 0.024<br>[1.06]     | 0.045<br>[1.49]     | -0.068<br>[1.91]*   |
| SOCIALSERV   | 0.0001<br>[0.03]    | 0.001<br>[0.24]     | -0.001<br>[0.21]    | 0.0001<br>[0.03]    | -0.00004<br>[0.01]  | -0.00004<br>[0.01]  |
| No. of Individuals   | 97                  | 131                 | 4,823               | 98                  | 131                 | 5,048               |
|  | 5,051               |                     |                     | 5,277               |                     |                     |
| Log-Likelihood   | -926.3              |                     |                     | -935.4              |                     |                     |
| Wald x2  | 277.2***            |                     |                     | 312.5***            |                     |                     |

Source: World Bank LSMS survey (2001-04). See Table 3 for variable definitions.  
Notes in Table 6 apply.

**Table 8: Business Survival Models, Heckman probit with selection**

|   | Working Age Population |               |               |               |               |               |               |               | Employed in 2001 |               |               |               |
|---|------------------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|------------------|---------------|---------------|---------------|
|   | (1a)                   |               | (2a)          |               | (3a)          |               | (4a)          |               | (5a)             |               | (6a)          |               |
|   | <i>M.Eff.</i>          | <i>z-stat</i> | <i>M.Eff.</i> | <i>z-stat</i> | <i>M.Eff.</i> | <i>z-stat</i> | <i>M.Eff.</i> | <i>z-stat</i> | <i>M.Eff.</i>    | <i>z-stat</i> | <i>M.Eff.</i> | <i>z-stat</i> |
| <b>Survival Equation:</b> [Dependent variable: Still Self-Employed one year after the transition/Not (1/0)] |                        |               |               |               |               |               |               |               |                  |               |               |               |
| MALE  | 0.011                  | [1.13]        | 0.011         | [1.33]        | 0.007         | [2.06]**      | 0.007         | [2.15]**      | 0.008            | [2.03]**      | 0.005         | [1.14]        |
| AGE   | 0.004                  | [1.77]*       | 0.003         | [1.16]        | 0.003         | [3.42]***     | 0.002         | [2.05]**      | 0.003            | [2.37]**      | 0.001         | [1.10]        |
| AGESQ/1,000   | -0.063                 | [2.06]**      | -0.039        | [1.37]        | -0.039        | [3.33]***     | -0.028        | [2.04]**      | -0.038           | [2.41]**      | -0.018        | [1.10]        |
| FBiH  | 0.006                  | [0.72]        | 0.004         | [0.58]        | 0.001         | [0.04]        | 0.002         | [0.52]        | 0.006            | [1.29]        | 0.006         | [1.31]        |
| URBAN   | 0.018                  | [1.99]**      | 0.014         | [1.64]        | 0.012         | [2.98]***     | 0.011         | [2.90]***     | 0.018            | [2.90]***     | 0.016         | [2.99]***     |
| MARRIED   | 0.008                  | [0.72]        | 0.004         | [0.47]        | 0.007         | [1.70]        | 0.006         | [1.08]        | 0.006            | [0.95]        | 0.001         | [0.05]        |
| LCHILDREN   | 0.011                  | [1.08]        | 0.013         | [1.39]        | 0.001         | [0.33]        | 0.003         | [0.59]        | 0.005            | [0.85]        | 0.008         | [1.42]        |
| EDUCLOW   | -0.016                 | [1.69]*       | -0.013        | [1.69]*       | -0.008        | [2.11]**      | -0.009        | [1.94]*       | -0.011           | [1.71]*       | -0.011        | [1.68]*       |
| DISABLED  | -0.019                 | [1.18]        | -0.015        | [1.39]        | -0.011        | [3.10]***     | 0.001         | [0.10]        | -0.001           | [0.11]        | 0.002         | [0.13]        |
| PASTSE  | 0.036                  | [1.14]        | 0.031         | [1.05]        | 0.041         | [3.27]***     | 0.044         | [3.24]***     | 0.046            | [2.88]***     | 0.032         | [2.06]**      |
| NOSOCPTL  | -0.010                 | [0.80]        | -0.014        | [1.46]        | -0.008        | [2.32]**      | -0.010        | [2.50]**      | -0.011           | [2.28]**      | -0.013        | [2.21]**      |
| OTHERSE   | 0.058                  | [3.32]***     | 0.054         | [3.40]***     | 0.029         | [4.21]***     | 0.037         | [5.41]***     | 0.046            | [3.72]***     | 0.044         | [3.83]***     |
| LHHCONS   | 0.016                  | [2.14]**      | 0.014         | [2.22]**      | -             | -             | -             | -             | -                | -             | -             | -             |
| INFORMAL  | -                      | -             | -             | -             | 0.014         | [2.72]***     | 0.012         | [2.22]**      | 0.013            | [2.45]**      | 0.015         | [2.48]**      |
| NONEMPLOYED   | -                      | -             | -             | -             | 0.007         | [1.70]*       | 0.008         | [1.40]        | -                | -             | -             | -             |
| INFORMLOAN  | -                      | -             | -0.001        | [0.01]        | -             | -             | -0.001        | [0.09]        | -                | -             | 0.003         | [0.47]        |
| MICROLOAN   | -                      | -             | -0.002        | [0.10]        | -             | -             | 0.003         | [0.31]        | -                | -             | 0.008         | [0.61]        |
| BANKLOAN  | -                      | -             | 0.020         | [1.65]*       | -             | -             | 0.007         | [1.24]        | -                | -             | 0.014         | [1.69]*       |
| REMITDOM  | -                      | -             | -0.017        | [1.79]*       | -             | -             | -0.009        | [1.52]        | -                | -             | -0.006        | [0.74]        |
| REMITABROAD   | -                      | -             | -0.003        | [0.22]        | -             | -             | -0.006        | [0.85]        | -                | -             | -0.011        | [1.64]        |
| GRANT   | -                      | -             | 0.066         | [1.14]        | -             | -             | 0.038         | [1.66]*       | -                | -             | 0.002         | [0.11]        |
| SOCIALSERV  | -                      | -             | -0.012        | [1.47]        | -             | -             | -0.010        | [2.38]**      | -                | -             | -0.013        | [2.12]**      |
| <b>Self-Employment Transition Equation:</b> [Dependent variable: New Self-Employed/Not (1/0)]               |                        |               |               |               |               |               |               |               |                  |               |               |               |
| MALE  | 0.023                  | [5.42]***     | 0.022         | [5.57]***     | 0.016         | [4.00]***     | 0.016         | [4.19]***     | 0.022            | [3.38]***     | 0.022         | [3.53]***     |
| AGE   | 0.005                  | [4.32]***     | 0.005         | [4.27]***     | 0.005         | [3.72]***     | 0.004         | [3.58]***     | 0.005            | [2.41]**      | 0.005         | [2.37]**      |
| AGESQ/1,000   | -0.064                 | [4.08]***     | -0.059        | [4.01]***     | -0.054        | [3.39]***     | -0.049        | [3.26]***     | -0.062           | [2.28]**      | -0.057        | [2.22]**      |
| FBiH  | -0.003                 | [0.85]        | -0.005        | [1.36]        | -0.001        | [0.14]        | -0.003        | [0.64]        | 0.002            | [0.25]        | -0.002        | [0.23]        |
| URBAN   | 0.006                  | [1.50]        | 0.005         | [1.32]        | 0.008         | [1.83]*       | 0.008         | [1.93]*       | 0.023            | [2.99]***     | 0.021         | [2.94]***     |
| MARRIED   | 0.007                  | [1.16]        | 0.007         | [1.20]        | 0.006         | [1.02]        | 0.005         | [0.89]        | 0.012            | [1.23]        | 0.011         | [1.21]        |
| LCHILDREN   | 0.004                  | [0.62]        | 0.004         | [0.73]        | 0.001         | [0.13]        | 0.001         | [0.12]        | -0.002           | [0.19]        | 0.001         | [0.04]        |
| EDUCLOW   | -0.010                 | [2.33]**      | -0.010        | [2.42]**      | -0.014        | [3.20]***     | -0.014        | [3.53]***     | -0.016           | [2.04]**      | -0.016        | [2.09]**      |
| DISABLED  | -0.016                 | [2.04]**      | -0.015        | [1.90]*       | -0.012        | [2.62]**      | -0.001        | [0.33]        | 0.004            | [0.67]        | 0.002         | [0.35]        |
| PASTSE  | 0.169                  | [7.17]***     | 0.162         | [7.11]***     | 0.155         | [6.73]***     | 0.152         | [6.73]***     | 0.142            | [5.29]***     | 0.138         | [5.27]***     |
| NOSOCPTL  | -0.017                 | [3.08]***     | -0.017        | [3.54]***     | -0.017        | [3.23]***     | -0.018        | [3.85]***     | -0.029           | [3.20]***     | -0.028        | [3.44]***     |
| OTHERSE   | 0.043                  | [4.54]***     | 0.040         | [4.38]***     | 0.053         | [5.28]***     | 0.053         | [5.45]***     | 0.079            | [4.41]***     | 0.077         | [4.46]***     |
| OPTIMISM  | 0.052                  | [2.75]***     | 0.049         | [2.64]***     | 0.042         | [2.45]**      | 0.053         | [3.21]***     | 0.106            | [3.42]***     | 0.095         | [3.16]***     |
| PENSION   | -0.011                 | [2.56]**      | -0.011        | [2.43]**      | -0.008        | [2.12]**      | -0.008        | [2.06]**      | -0.014           | [2.16]**      | -0.012        | [1.73]*       |
| LHHCONS   | 0.019                  | [4.76]***     | 0.019         | [4.98]***     | -             | -             | -             | -             | -                | -             | -             | -             |
| INFORMAL  | -                      | -             | -             | -             | 0.019         | [2.85]***     | 0.020         | [3.01]***     | 0.027            | [2.78]***     | 0.028         | [2.85]***     |
| NONEMPLOYED   | -                      | -             | -             | -             | -0.010        | [1.80]*       | -0.009        | [1.62]        | -                | -             | -             | -             |
| INFORMLOAN  | -                      | -             | -0.005        | [0.99]        | -             | -             | -0.004        | [0.85]        | -                | -             | -0.005        | [0.57]        |
| MICROLOAN   | -                      | -             | 0.001         | [0.03]        | -             | -             | -0.002        | [0.23]        | -                | -             | 0.013         | [0.66]        |
| BANKLOAN  | -                      | -             | 0.008         | [1.22]        | -             | -             | 0.009         | [1.47]        | -                | -             | 0.004         | [0.42]        |
| REMITDOM  | -                      | -             | -0.007        | [1.12]        | -             | -             | -0.007        | [1.09]        | -                | -             | -0.008        | [0.65]        |
| REMITABROAD   | -                      | -             | -0.015        | [2.74]***     | -             | -             | -0.014        | [2.45]**      | -                | -             | -0.028        | [3.11]***     |
| GRANT   | -                      | -             | 0.077         | [3.01]***     | -             | -             | 0.077         | [2.98]***     | -                | -             | 0.071         | [1.40]        |
| SOCIALSERV  | -                      | -             | -0.002        | [0.57]        | -             | -             | -0.004        | [0.86]        | -                | -             | -0.012        | [1.55]        |
| No. of obs.   | 5,007                  |               | 5,007         |               | 5,007         |               | 5,007         |               | 2,934            |               | 2,934         |               |
| Censored Obs.   | 4,823                  |               | 4,823         |               | 4,823         |               | 4,823         |               | 2,787            |               | 2,787         |               |
| Log-Likelihood  | -792.4                 |               | -778.1        |               | -778.1        |               | -767.8        |               | -601.1           |               | -601.6        |               |
| Wald x2   | 46.6***                |               | 57.2***       |               | 114.7***      |               | 114.7***      |               | 140.2***         |               | 81.9***       |               |
| Wald x2 (ind eqs)   | 3.77*                  |               | 2.36          |               | 3.81*         |               | 12.47***      |               | 5.71**           |               | 21.64***      |               |

Source: World Bank LSMS survey (2001-04). See Table 3 for variable definitions.

Notes in Table 6 apply.

## Appendix

| Table A1: Variable names, definitions and sample averages (World Bank LSMS, 2001-04) |  |       |         |
|--|--|-------|---------|
| Variable Name  | Definition   | Mean  | (S.D.)  |
| <b>Individual Characteristics:</b>   |  |       |         |
| MALE   | Dummy variable (DV=1/0) equal to 1 if respondent is male   | 51.3% | (0.50)  |
| AGE  | Age of the respondent in year 2001   | 35.80 | (12.92) |
| FBiH   | DV equal to 1 if respondent resides in Federation of Bosnia & Herzegovina (0 in Republica Srpska)  | 55.3% | (0.50)  |
| URBAN  | DV equal to 1 if respondent resides in an urban area   | 45.6% | (0.50)  |
| MARRIED  | DV equal to 1 if respondent is married or cohabiting in 2001   | 60.9% | (0.49)  |
| LCHILDREN  | Natural Logarithm of declared number of children (natural or not) plus 1   | 0.66  | (0.59)  |
| EDUCLOW  | DV equal to 1 if respondent has no formal education or primary school education  | 34.3% | (0.47)  |
| DISABLED   | DV equal to 1 if respondent considers him/herself disabled   | 4.6%  | (0.21)  |
| GHEALTH  | DV equal to 1 if respondent evaluates his/her health as good or excellent during the last 12 months, the two top categories in the 5-scale Subjective Health Evaluation Question   | 37.8% | (0.48)  |
| PASTSE   | DV equal to 1 if respondent's first occupation after school-leaving age was self-employed  | 2.2%  | (0.15)  |
| OPTIMISM   | Index [0,1] produced as the weighted average of the intensity measured by a 4-scale response in 8 mental health questions from the GHQ: During the last week how often have you: (1) Felt low in energy, slowed down? (2) Accused yourself for different things? (3) Felt you lost appetite? (4) Felt hopeless in terms of the future? (5) Felt Lonely? (6) Thought about ending your life? (7) Felt that everything was an effort? (8) Constantly had nightmares? | 0.90  | (0.11)  |
| NOSOCPTL   | DV , proxy for individual social capital, equal to 1 if individual responded "No" to either question: (1) "Is there anyone you can count of to listen to you when you need to talk?", (2) "Is there anyone who you can really count on to help you out in a crisis?"   | 19.6% | (0.40)  |
| OTHERSE  | DV equal to 1 if another member of the household is self-employed in 2001  | 6.7%  | (0.25)  |
| HINSUR   | DV equal to 1 if respondent receives health insurance, either from work or the Employment Bureau   | 75.2% | (0.43)  |
| PENSION  | DV equal to 1 if respondent receives pension insurance, either from work or Employment Bureau, or Centre for Social Work   | 34.4% | (0.48)  |
| <b>Wealth and Financial Characteristics:</b>   |  |       |         |
| LHHCONS  | Natural Logarithm of Total per capita Household Consumption in 2001, deflated at the regional level by regional poverty line (Main Welfare Aggregate)  | 7.83  | (0.52)  |
| POOR   | DV (1/0) if a Equivalized Household Consumption in 2001 is less than 2/3 of the median per entity  | 25.4% | (0.44)  |
| INFORMLOAN   | DV (1/0) if a household member received a loan from a family member, friend or other individual in 2001  | 17.1% | (0.38)  |
| MICROLOAN  | DV (1/0) if a household member received a loan from a microfinance institution or microloan from a credit union, co-operative or NGO in 2001   | 2.5%  | (0.16)  |
| BANKLOAN   | DV (1/0) if a household member received a loan from a private or government Bank in 2001   | 11.6% | (0.32)  |
| REMITDOM   | DV (1/0) if a household member received any money from friends or family working in BiH in 2001  | 8.5%  | (0.28)  |
| REMITABROAD  | DV (1/0) if a household member received any money from friends or family working abroad in 2001  | 11.4% | (0.32)  |
| GRANT  | DV (1/0) if a household member received money from NGOs or charities in 2001   | 2.1%  | (0.14)  |
| SOCIALSERV   | DV (1/0) if a household member received old age or disability pension, or survivors, war veterans, or war disability pensions from the Civil Victims of War Program in 2001  | 27.5% | (0.45)  |
| <b>Employment Status in 2001:</b>  |  |       |         |
| EMPLOYED   | DV (1/0) if respondent was in paid employment in 2001 (formal or informal)   | 56.1% | (0.50)  |
| FORMAL   | DV (1/0) if respondent was a formal sector employee in 2001  | 35.2% | (0.48)  |
| INFORMAL   | DV (1/0) if respondent was employed in the informal sector in 2001   | 20.8% | (0.41)  |
| NONEMPLOYED  | DV (1/0) if respondent was not in paid employment in 2001 (formal or informal)   | 43.9% | (0.50)  |
| UNEMPLOYED   | DV (1/0) if respondent declared status as unemployed in 2001   | 18.8% | (0.39)  |
| INACTIVE   | DV (1/0) if respondent declared status as student/retired/housewife in 2001  | 25.1% | (0.43)  |
| <b>Switch to Self-Employment:</b>  |  |       |         |
| NEWSE  | DV (1,0) indicating that the individual switched to self-employment after 2001   | 4.29% | (0.20)  |
| NEWSE-OA   | DV (1,0) indicating that the individual switched to own-account self-employment after 2001   | 2.45% | (0.15)  |
| NEWSE-EMPL   | DV (1,0) indicating that the individual switched to self-employment with employees after 2001  | 1.84% | (0.13)  |

**Table A2: Correlation matrix between key variables (World Bank LSMS 2001-04)**

|             | NEW-SE             | SURVIVE            | MALE               | FBIH               | AGE                | URBAN              | MARRY              | LCHILD             | EDLOW              | DISABL             | OPTIM              | NOSCPT             | PENSION            | LHHCONS            | INFORMAL           | NONEMPL            | INFORM<br>LOAN    | MICRO<br>LOAN     | BANK<br>LOAN      | REMIT<br>DOM      | REMIT<br>ABROAD   | GRANT             | SOCIAL<br>SERV |
|-------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------|
| NEWSE       | 1.00               |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| SURVIVOR    | .                  | 1.00               |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| MALE        | 0.08 <sup>a</sup>  | -0.08              | 1.00               |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| FBIH        | -0.03 <sup>c</sup> | 0.11               | -0.003             | 1.00               |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| AGE         | 0.03 <sup>b</sup>  | -0.03              | 0.02               | -0.05 <sup>c</sup> | 1.00               |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| URBAN       | 0.03 <sup>b</sup>  | 0.17 <sup>b</sup>  | -0.02 <sup>c</sup> | 0.01               | -0.02 <sup>c</sup> | 1.00               |                    |                    |                    |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| MARRIED     | 0.06 <sup>a</sup>  | 0.08               | -0.04 <sup>a</sup> | -0.02 <sup>c</sup> | 0.49 <sup>a</sup>  | -0.05 <sup>a</sup> | 1.00               |                    |                    |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| LCHILDREN   | 0.05 <sup>a</sup>  | 0.06               | -0.09 <sup>a</sup> | -0.02 <sup>c</sup> | 0.60 <sup>a</sup>  | -0.11 <sup>a</sup> | 0.67 <sup>a</sup>  | 1.00               |                    |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| EDLOW       | -0.06 <sup>a</sup> | -0.16 <sup>b</sup> | -0.15 <sup>a</sup> | -0.03 <sup>c</sup> | 0.20 <sup>a</sup>  | -0.32 <sup>a</sup> | 0.10 <sup>a</sup>  | 0.19 <sup>a</sup>  | 1.00               |                    |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| DISABLED    | -0.02              | -0.05              | 0.08 <sup>a</sup>  | -0.01              | 0.13 <sup>a</sup>  | -0.03 <sup>b</sup> | 0.07 <sup>a</sup>  | 0.10 <sup>a</sup>  | 0.08 <sup>a</sup>  | 1.00               |                    |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| OPTIMISM    | 0.05 <sup>a</sup>  | 0.001              | 0.09 <sup>a</sup>  | 0.08 <sup>a</sup>  | -0.25 <sup>a</sup> | 0.05 <sup>a</sup>  | -0.07 <sup>a</sup> | -0.15 <sup>a</sup> | -0.18 <sup>a</sup> | -0.16 <sup>a</sup> | 1.00               |                    |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| NOSCPTL     | -0.07 <sup>a</sup> | 0.01               | 0.04 <sup>a</sup>  | 0.05 <sup>a</sup>  | 0.07 <sup>a</sup>  | 0.04 <sup>a</sup>  | -0.06 <sup>a</sup> | -0.14 <sup>a</sup> | 0.02               | 0.01               | -0.08 <sup>a</sup> | 1.00               |                    |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| PENSION     | 0.01               | 0.09               | 0.14 <sup>a</sup>  | 0.04 <sup>a</sup>  | 0.33 <sup>a</sup>  | 0.14 <sup>a</sup>  | 0.15 <sup>a</sup>  | 0.18 <sup>a</sup>  | -0.19 <sup>a</sup> | 0.05 <sup>a</sup>  | -0.03 <sup>c</sup> | -0.01              | 1.00               |                    |                    |                    |                   |                   |                   |                   |                   |                   |                |
| LHHCONS     | 0.09 <sup>a</sup>  | 0.04               | -0.01              | -0.01              | 0.09 <sup>a</sup>  | 0.11 <sup>a</sup>  | -0.04 <sup>b</sup> | -0.06 <sup>a</sup> | -0.13 <sup>a</sup> | -0.02 <sup>c</sup> | 0.04 <sup>a</sup>  | -0.10 <sup>a</sup> | 0.17 <sup>a</sup>  | 1.00               |                    |                    |                   |                   |                   |                   |                   |                   |                |
| INFORMAL    | 0.09 <sup>a</sup>  | -0.20 <sup>a</sup> | 0.08 <sup>a</sup>  | -0.14 <sup>a</sup> | 0.07 <sup>a</sup>  | -0.16 <sup>a</sup> | 0.04 <sup>a</sup>  | 0.05 <sup>a</sup>  | 0.16 <sup>a</sup>  | 0.03 <sup>b</sup>  | -0.05 <sup>a</sup> | 0.02               | -0.26 <sup>a</sup> | 0.01               | 1.00               |                    |                   |                   |                   |                   |                   |                   |                |
| NONEMPLOYED | -0.10 <sup>a</sup> | 0.24 <sup>a</sup>  | -0.23 <sup>a</sup> | 0.13 <sup>a</sup>  | -0.28 <sup>a</sup> | -0.01              | -0.22 <sup>a</sup> | -0.17 <sup>a</sup> | 0.11 <sup>a</sup>  | -0.03 <sup>c</sup> | -0.01              | 0.003              | -0.43 <sup>a</sup> | -0.13 <sup>a</sup> | -0.45 <sup>a</sup> | 1.00               |                   |                   |                   |                   |                   |                   |                |
| INFORMLOAN  | -0.01              | -0.02              | 0.01               | -0.18 <sup>a</sup> | 0.01               | -0.02 <sup>c</sup> | 0.04 <sup>a</sup>  | 0.04 <sup>a</sup>  | 0.03 <sup>b</sup>  | 0.02 <sup>c</sup>  | -0.17 <sup>a</sup> | 0.01               | -0.06 <sup>a</sup> | 0.04 <sup>a</sup>  | 0.07 <sup>a</sup>  | -0.02 <sup>c</sup> | 1.00              |                   |                   |                   |                   |                   |                |
| MICROLOAN   | 0.001              | -0.01              | 0.001              | 0.01               | -0.02              | -0.002             | 0.003              | 0.01               | -0.01              | -0.01              | -0.04 <sup>a</sup> | -0.03 <sup>c</sup> | 0.03 <sup>c</sup>  | 0.04 <sup>a</sup>  | 0.01               | -0.01              | 0.09 <sup>a</sup> | 1.00              |                   |                   |                   |                   |                |
| BANKLOAN    | 0.02               | 0.09               | -0.01              | 0.13 <sup>a</sup>  | -0.02              | 0.07 <sup>a</sup>  | 0.03 <sup>b</sup>  | 0.04 <sup>a</sup>  | -0.07 <sup>a</sup> | 0.001              | 0.05 <sup>a</sup>  | -0.03 <sup>b</sup> | 0.12 <sup>a</sup>  | 0.07 <sup>a</sup>  | -0.05 <sup>a</sup> | -0.05 <sup>a</sup> | 0.03 <sup>b</sup> | 0.06 <sup>a</sup> | 1.00              |                   |                   |                   |                |
| REMITDOM    | -0.02 <sup>c</sup> | -0.12              | -0.03 <sup>b</sup> | -0.03 <sup>b</sup> | -0.02              | -0.01              | -0.02              | 0.02               | 0.001              | 0.02               | -0.02              | -0.03 <sup>b</sup> | -0.05 <sup>a</sup> | -0.01              | -0.02 <sup>c</sup> | 0.07 <sup>a</sup>  | 0.06 <sup>a</sup> | 0.002             | 0.02 <sup>b</sup> | 1.00              |                   |                   |                |
| REMITABROAD | -0.03 <sup>b</sup> | 0.02               | -0.01              | -0.10 <sup>a</sup> | 0.01               | -0.001             | 0.02 <sup>c</sup>  | 0.05 <sup>a</sup>  | -0.02              | 0.03 <sup>b</sup>  | -0.01              | -0.06 <sup>a</sup> | -0.02              | 0.03 <sup>b</sup>  | -0.01              | 0.03 <sup>b</sup>  | 0.04 <sup>a</sup> | 0.01              | -0.02             | 0.21 <sup>a</sup> | 1.00              |                   |                |
| GRANT       | 0.01               | 0.07               | -0.05 <sup>a</sup> | 0.01               | -0.03 <sup>b</sup> | -0.02              | -0.06 <sup>a</sup> | -0.02 <sup>c</sup> | 0.04 <sup>a</sup>  | -0.001             | -0.04 <sup>a</sup> | 0.04 <sup>a</sup>  | -0.01              | -0.06 <sup>a</sup> | -0.03 <sup>b</sup> | 0.06 <sup>a</sup>  | 0.04 <sup>a</sup> | 0.08 <sup>a</sup> | -0.01             | 0.13 <sup>a</sup> | 0.09 <sup>a</sup> | 1.00              |                |
| SOCIALSERV  | -0.02 <sup>c</sup> | -0.12              | -0.03 <sup>b</sup> | -0.01              | 0.05 <sup>a</sup>  | 0.001              | -0.09 <sup>a</sup> | 0.03 <sup>a</sup>  | 0.04 <sup>b</sup>  | 0.11 <sup>a</sup>  | -0.15 <sup>a</sup> | 0.04 <sup>a</sup>  | 0.13 <sup>a</sup>  | -0.02              | 0.02               | 0.10 <sup>a</sup>  | 0.04 <sup>a</sup> | 0.03 <sup>b</sup> | 0.04 <sup>b</sup> | 0.06 <sup>a</sup> | 0.04 <sup>a</sup> | 0.07 <sup>a</sup> | 1.00           |

Source: World Bank LSMS (2001-04). See Table 3 for variable definitions.